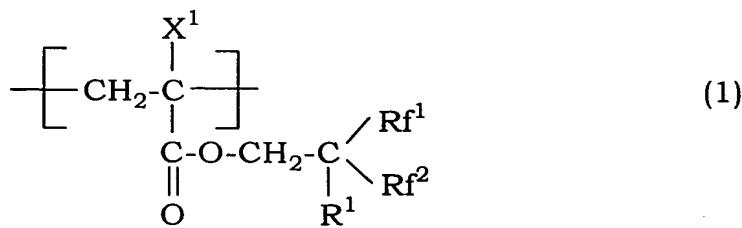


CLAIMS

1. A fluorine-containing optical material which comprises a fluorine-containing copolymer comprising from 32 to 36 % by mole of a
5 structural unit (a) represented by the formula (1):

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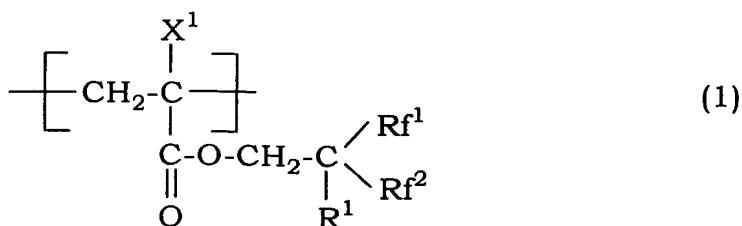
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wherein X^1 is H, CH_3 , F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, and from 64 to 68 % by mole of a structural unit (b) derived from methyl methacrylate.

20

2. A fluorine-containing optical material which comprises a fluorine-containing copolymer comprising from 15 to 62 % by mole of a structural unit (a) represented by the formula (1):

25



wherein X^1 is H, CH_3 , F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different

and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R¹ is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, from 12 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of
5 a structural unit (c) (excluding the structural unit (a)) derived from a fluorine-containing monomer which is copolymerizable therewith.

3. The fluorine-containing optical material of Claim 1 or 2,
wherein in the formula (1), X¹ is CH₃.

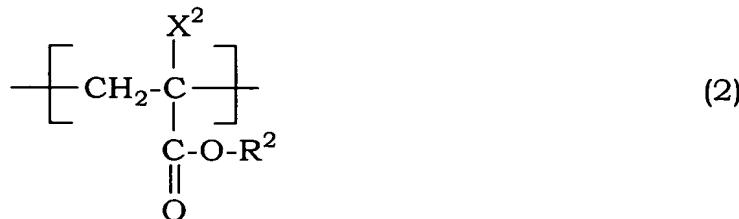
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4. The fluorine-containing optical material of Claim 3,
wherein the fluorine-containing copolymer comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c).

15

5. The fluorine-containing optical material of any of Claims 2 to 4, wherein in the fluorine-containing copolymer, the structural unit (c) is a structural unit (c1) represented by the formula (2):

20



25 wherein X² is H, CH₃, F, CF₃ or Cl; R² is H or a fluoroalkyl group; the structural unit represented by the formula (1) is excluded, and when R² is H, X² is neither H nor CH₃.

6. The fluorine-containing optical material of Claim 5, wherein in the formula (2), R² is a fluoroalkyl group having 3 to 8 carbon atoms.

5 7. The fluorine-containing optical material of Claim 5 or 6, wherein the fluorine-containing copolymer comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c1).

10 8. The fluorine-containing optical material of any of Claims 5 to 7, wherein in the fluorine-containing copolymer, the number of carbon atoms of R² in the formula (2) representing the structural unit (c1) is from 4 to 6.

15 9. The fluorine-containing optical material of Claim 8, wherein in the fluorine-containing copolymer, R² in the formula (2) representing the structural unit (c1) is represented by the formula (3):



20 wherein n is an integer of from 3 to 5.

10. The fluorine-containing optical material of Claim 8, wherein in the fluorine-containing copolymer, R² in the formula (2)
25 representing the structural unit (c1) is -CH₂C₄F₈H.

11. The fluorine-containing optical material of any of Claims

5 to 10, wherein in the fluorine-containing copolymer, X² in the formula (2) representing the structural unit (c1) is -CH₃.

12. The fluorine-containing optical material of any of Claims
5 1 to 11, which has a glass transition temperature of not less than 100°C,
a refractive index of not more than 1.440 and a fluorine content of not
less than 20 % by weight.

13. The fluorine-containing optical material of Claim 12,
10 wherein the glass transition temperature is not less than 105°C.

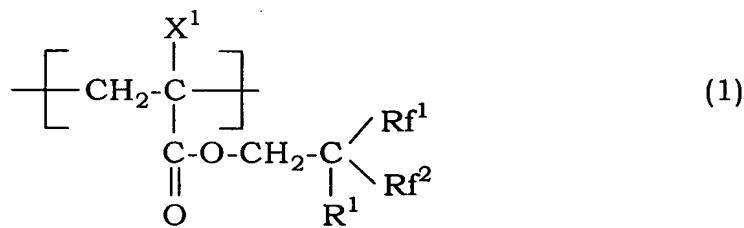
14. The fluorine-containing optical material of Claim 12 or 13,
wherein the refractive index is not more than 1.430.

15. The fluorine-containing optical material of any of Claims
12 to 14, wherein the fluorine content is not less than 30 % by weight.

16. A material for clad of optical fiber which is obtained from
the fluorine-containing optical material of any of Claims 1 to 15.

20

17. A fluorine-containing copolymer which has a weight
average molecular weight of from 10,000 to 1,000,000 and comprises
from 32 to 36 % by mole of a structural unit (a) represented by the
formula (1):



5

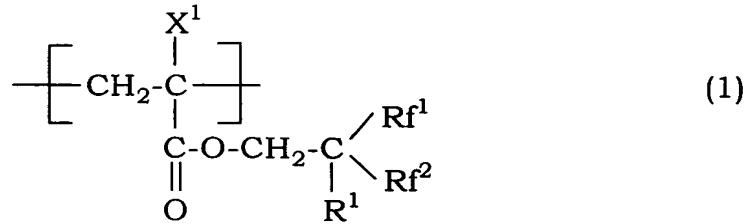
wherein X^1 is H, CH_3 , F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be substituted with fluorine atom, and from 64 to 68 % by mole of a structural unit (b) derived from methyl methacrylate.

18. The fluorine-containing copolymer of Claim 17, wherein in the formula (1), X^1 is CH_3 .

15

19. A fluorine-containing copolymer which has a weight average molecular weight of from 10,000 to 1,000,000 and comprises from 15 to 62 % by mole of a structural unit (a) represented by the formula (1) :

20

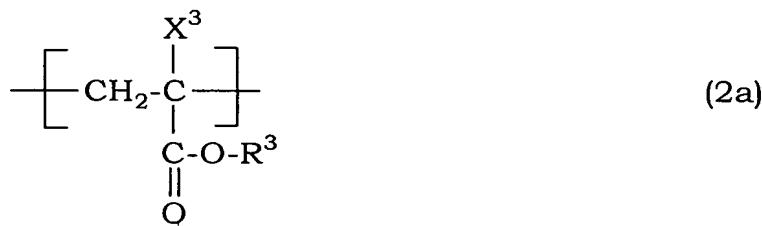


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wherein X^1 is H, CH_3 , F, CF_3 or Cl; Rf^1 and Rf^2 are the same or different and each is a perfluoroalkyl group having 1 to 5 carbon atoms; R^1 is a hydrocarbon group having 1 to 5 carbon atoms which may be

substituted with fluorine atom, from 12 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of a structural unit (c2) represented by the formula (2a):

5



10 wherein X^3 is H, CH_3 , F, CF_3 or Cl; R^3 is H or a fluoroalkyl group; the structural unit represented by the formula (1) is excluded, and when R^3 is H, X^3 is neither H nor CH_3 .

15 20. The fluorine-containing copolymer of Claim 19, wherein in the formula (1), X^1 is CH_3 .

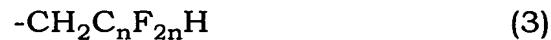
20 21. The fluorine-containing copolymer of Claim 19 or 20, which comprises from 23 to 50 % by mole of the structural unit (a), from 33 to 70 % by mole of the structural unit (b) and from 1 to 40 % by mole of the structural unit (c2).

25 22. The fluorine-containing copolymer of any of Claims 19 to 21, wherein the number of carbon atoms of R^3 in the formula (2a) representing the structural unit (c2) is from 4 to 6.

25

23. The fluorine-containing copolymer of Claim 22, wherein R^3 in the formula (2a) representing the structural unit (c2) is represented

by the formula (3):



5 wherein n is an integer of from 3 to 5.

24. The fluorine-containing copolymer of Claim 22, wherein R³ in the formula (2a) representing the structural unit (c2) is -CH₂C₄F₈H.

10 25. The fluorine-containing copolymer of any of Claims 19 to 24, wherein X³ in the formula (2a) representing the structural unit (c2) is -CH₃.